

WHAT IS CLAIMED IS:

1. An image reading apparatus comprising:

a film set section at which a film is set and from which the set film is fed;

a first detecting section which detects starting positions of respective frame images of the film fed from the film set section, and positions of marks formed outside the respective frame images;

a storing section which sets and stores, on the basis of the starting positions of the respective frame images and the positions of the marks detected by the first detecting section, a position of a frame corresponding mark, which corresponds to the starting position, every each of the frame images;

a second detecting section, provided at downstream side of the first detecting section, which detects the position of the frame corresponding mark every each of the frame images; and

an image reading section which reads each of the image frames in order of frame number thereof on the basis of the stored contents in the storing section and detection data detected by the second detecting section.

2. An image reading apparatus according to claim 1, wherein the storing section estimates and stores a starting position of a frame image which cannot be detected by the first detecting section, and a position of a frame corresponding mark which corresponds to the starting position of the frame image which

cannot be detected by the first detecting section, on the basis of a starting position of a frame image of the film, which can be detected by the first detecting section, and a position of a frame corresponding mark which corresponds to the starting position of the frame image which can be detected by the first detecting section.

3. An image reading apparatus according to claim 1, wherein the mark formed outside the frame image is a perforation formed at the film.

4. An image reading apparatus according to claim 2, wherein the mark formed outside the frame image is a perforation formed at the film.

5. An image reading apparatus according to claim 1 further comprising a determining section which judges at least one of direction of a surface of the film and type of the film.

6. An image reading apparatus according to claim 2 further comprising a determining section which judges at least one of direction of a surface of the film and type of the film.

7. An image reading apparatus according to claim 5, wherein the determination is made by the determining section by detecting a bar code provided at the film.

8. An image reading apparatus according to claim 6, wherein the determination is made by the determining section by detecting a bar code provided at the film.

9. An image reading apparatus according to claim 5, wherein

the determination is made by the determining section by detecting silver on the film with infrared light.

10. An image reading apparatus according to claim 7, wherein the determination is made by the determining section by detecting silver on the film with infrared light.

11. An image reading apparatus according to claim 1 further comprising a pre-scanning section, provided at upstream side of the image reading section, which carries out a pre-scanning of the film.

12. An image reading apparatus according to claim 2 further comprising a pre-scanning section, provided at upstream side of the image reading section, which carries out a pre-scanning of the film.

13. An image reading apparatus comprising:

a film set section at which a film is set and from which the set film is fed;

a first detecting section which detects starting positions of respective frame images of the film fed from the film set section, and positions of marks formed outside the respective frame images;

a storing section which sets and stores, on the basis of the starting positions of the respective frame images and the positions of the marks detected by the first detecting section, a position of a frame corresponding mark, which corresponds to the starting position, every each of the frame images;

a second detecting section, provided at downstream side of the first detecting section, which detects the position of the frame corresponding mark every each of the frame images; and

an image reading section which reads each of the image frames, without the film being conveyed to the reverse direction, on the basis of the stored contents in the storing section and detection data detected by the second detecting section.

14. An image reading apparatus according to claim 13, wherein the storing section estimates and stores a starting position of a frame image which cannot be detected by the first detecting section, and a position of a frame corresponding mark which corresponds to the starting position of the frame image which cannot be detected by the first detecting section, on the basis of a starting position of a frame image of the film, which can be detected by the first detecting section, and a position of a frame corresponding mark which corresponds to the starting position of the frame image which can be detected by the first detecting section.